

FlexiPrep

Fractions: Definition, Types and Adding and Subtracting Fractions

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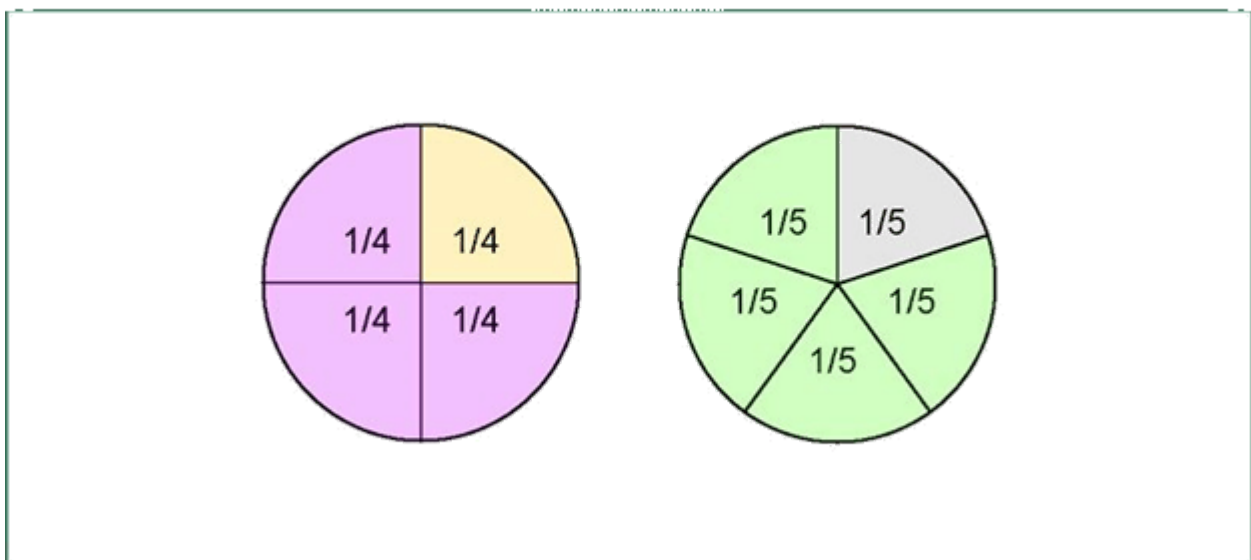
Fractions simply tell how many parts of a whole (number or any certain value). In other words, it is also termed as portion or section or division of any quantity. It is denoted by using '/' symbol, such as a/b .

For example, in $2/4$, the number on top is the numerator, while the number below is the denominator. A fraction is a word that originated from Latin. In Latin, "**Fractus**" means "**broken**".

We cut a piece of cake from the whole of it, say $1/4$ th of it, then the portion is the fraction of the cake. Now, a fraction could be a fraction unless the denominator is not equal to 1 or 0.

Equivalent fractions, where two or more fractions are equivalent when both have common multiples both for numerator and denominator. For example, $1/2$ is the equivalent fraction of $2/4$. Fractions also have its major application in **ratio and proportion**.

Fractions

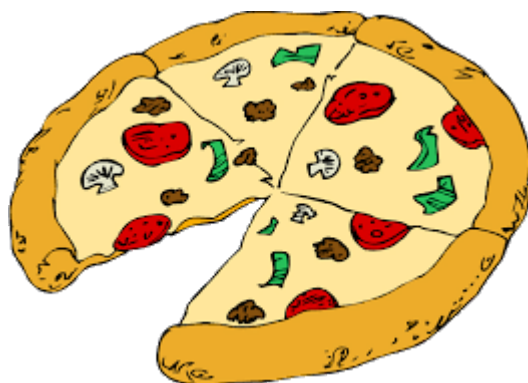


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Definition of Fractions

A fraction represents number of equal parts of a whole. Suppose a number has to be divided into four parts, then it is represented as $\frac{x}{4}$. So, the fraction here, $\frac{x}{4}$, defines $\frac{1}{4}$ th of number x . Fractions in maths are painful if you do not grasp the underlying concept behind it. Fractions form an important part of our daily lives. There are many examples of fractions you will come

across in real life. We have to willingly or unwillingly share that yummy pizza amongst our friends and families. Three people, four slices.



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Slice an apple, and we get fractions.

Type of Fractions

Based on the properties of numerator and denominator, fractions are sub-divided into different types. They are:

- Proper fractions
- Improper fractions
- Like fractions
- Unlike fractions
- Mixed fractions

Proper Fractions

The proper fractions are those where the numerator is less than the denominator. For example, $\frac{8}{9}$ will be a proper fraction since “*numerator < denominator*”.

Improper Fractions

The improper fractions, as one can deduce, is the fractions where the numerator happens to be greater than the denominator. For example, $\frac{9}{8}$ will be an improper fraction since “*denominator < numerator*”.

Like Fractions

Like fractions are those fractions, as the name suggests, that are alike or same.

For example, take $\frac{1}{2}$ and $\frac{2}{4}$; they are alike since if you simplify it mathematically, you will get the same fraction.

Unlike Fractions

Unlike fractions, are those that are dissimilar.

For example, $\frac{1}{2}$ and $\frac{1}{3}$ are unlike fractions.

Mixed Fractions

A mixed fraction is the sum of a non-zero integer and proper fraction. These are also called a mixed number or mixed numeral. For example:

$$3\frac{2}{3} = \frac{[(3 \times 3) + 2]}{3} = \frac{11}{3}$$

Adding and Subtracting Fractions

You can quickly add fractions with the same denominator. Just add the numerator, keeping the denominator same.

If the Denominator is the same, adding and subtracting fractions is an easy task. But how do you add $\frac{2}{4} + \frac{3}{9}$?

Or how will you solve $\frac{6}{12} - \frac{3}{27}$? This is adding and subtracting fractions with unlike denominators.

We can multiply fractions, divide fractions, divide fractions by fractions and so much more.



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Daily Life Examples of Fractions

Let us visualize some of the fraction's examples:

1. Imagine a pie with four slices. Taking two slices of pie for yourself would mean that you have two out of the four. Hence, you represent it as $\frac{2}{4}$.
2. Fill half a glass of water. What do you see? $\frac{1}{2}$ glass is full. Or $\frac{1}{2}$ glass is empty. This $\frac{1}{2}$ is fractions where 1 is the Numerator that is, the number of parts we have. And 2 is the Denominator, the number of parts the whole glass is divided into.

Fractions to Decimals

As we already learned enough about fractions, which are the part of a whole. The decimals are the numbers expressed in a decimal form which represents fractions, after division.

For example, Fraction $\frac{1}{2}$ can be written in decimal form as 0.5.

The best part of decimals are they can be easily used for any arithmetic operations such as addition, subtraction, etc. Whereas it is difficult sometimes to perform operations on fractions. Let us take an example to understand;

Example: Add $\frac{1}{6}$ and $\frac{1}{4}$.

Solution:

Here given two fractions, $\frac{1}{6}$ and $\frac{1}{4}$

It is unlike fraction. Denominator is different.

Adding these two fractions,

$$\frac{1}{6} + \frac{1}{4}$$

This fraction converts into decimal.

$$\frac{1}{6} = 0.17 \text{ and } \frac{1}{4} = 0.25$$

$$0.17 + 0.25$$

Hence, on adding 0.17 and 0.25, we get;

$$= 0.42$$

Example Problems

Question 1: Is $\frac{14}{5}$ a fraction?

Solution: Yes, it is. It is called an improper fraction.

Question 2: Convert 132.1400 into fraction.

Solution:

Here will use the concept of how to convert decimals into fractions

$$\begin{aligned} 132.1400 &= \frac{132.1400}{10000} \\ &= \frac{13214}{1000} \end{aligned}$$

This is improper fraction.

Question 3: Add $\frac{3}{5}$ and $\frac{10}{15}$.

Solution:

- Here given two fractions,

$$\frac{3}{5} \text{ and } \frac{10}{15}$$

- We adding these two fractions,

$$= \frac{3}{5} + \frac{10}{15}$$

- Both fractions are proper fraction and unlike fraction.

- So, we take the LCM,

$$15 = 3 \times 5$$

$$5 = 1 \times 5$$

- LCM of 15, 5 = $3 \times 5 = 15$, we get,

$$= \frac{15 + 10}{15}$$

- Sum of 15 and 10.

$$= \frac{25}{15}$$

- Denominator and numerator both divide by 5, because common factor 5.

$$= \frac{5 \times \cancel{5}}{3 \times \cancel{5}}$$

$$= \frac{5}{3}$$

Question 4: Subtract $\frac{3}{5}$ from $\frac{15}{2}$

Solution:

Here given two fractions,

$$\frac{3}{5} \text{ and } \frac{15}{2}$$

Subtract $\frac{3}{5}$ from $\frac{15}{2}$

$$= \frac{15}{2} - \frac{3}{5}$$

$$= \frac{45 - 6}{10}$$

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$$= \frac{39}{10}$$

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